Naseem Alston - NOAA Federal

From:	Naseem Alston - NOAA Federal
Sent:	Thursday, March 28, 2019 6:03 PM
To:	Amanda Cranford
Subject:	please fix - SOS - winter-run

Hi,

can you please fix this section - it is the short-version of the SOS for ROCon. They are trying to keep this section very brief... (but we shouldn't leave out important stuff)

It left out recent years of increased production, but also the importance of the hatchery component - keeping the single population alive, etc (you can edit in word - I just plunked it here quick...)

The year 2014 was the third year of a drought that resulted in increased water temperatures in the upper Sacramento River, and egg-to-fry survival to the Red Bluff Diversion Dam (RBDD) was approximately 5 percent (NMFS 2016a). Due to the anticipated lower than average survival in 2014, hatchery production from Livingston Stone National Fish Hatchery (LSNFH) was tripled (i.e., 612,056 released) to offset the impact of the drought (CVP and SWP Drought Contingency Plan 2014). In 2014, hatchery production represented 83 percent of the total in-river juvenile production. In 2015, egg-to-fry survival was the lowest on record (approximately 4 percent) due to the inability to release cold water from Shasta Dam in the fourth year of the drought. Winter-run Chinook salmon returns in 2016 to 2018 were low, as expected, due to poor in-river conditions for juveniles from brood year 2013 to 2015 during drought years. The 2018 adult winter-run return improved from 2017, though similarly dominated by hatchery-origin fish.

Although impacts from hatchery fish (i.e., reduced fitness, weaker genetics, smaller size, less ability to avoid predators) are often cited as having deleterious impacts on natural in-river populations (Matala et al. 2012), the winter-run Chinook salmon conservation program at LSNFH is strictly controlled by the USFWS to reduce such impacts. The average annual hatchery production at LSNFH is approximately 216,015 per year (2001 to 2018 average) compared to the estimated natural production that passes RBDD, which is 2.9 million per year based on the 2002 to 2018 average (Poytress and Carrillo 2011, USFWS 2018a). Therefore, hatchery production typically represents approximately 7 percent of the total in-river juvenile production in any given year. This percentage of hatchery origin emigrants results in a higher percentage of hatchery-origin spawners, with an average of 21 percent hatchery-origin spawners over the last 18 years (about six generations), putting the population at a moderate risk of extinction (NMFS 2016a).

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